

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims, in which claims 1-9 are currently amended.

1. (Currently Amended) ~~Resolution~~ A resolution filter (4) for a spectrum analyser (1), wherein the resolution filter (4) has the following complex, discrete impulse response $h_{used}(k)$:

$$h_{used}(k) = C_1 \cdot \left[e^{-C_2 T_a^2 \cdot k^2} * h_{allp}(t) \right] \cdot e^{-jC_3 (k-k_0)^2 \cdot T_a^2}$$

wherein C_1 , C_2 and C_3 are constants, k is the sampling index and T_a is the sampling period,

wherein $h_{allp}(t)$ is the Fourier retransform of $e^{j\varphi(f)}$, in which $\varphi(f)$ is a randomly-specified phase response dependent upon the frequency of the transmission function of the resolution filter,

wherein k_0 is a free variation parameter and

wherein the variation parameter k_0 is set in such a manner that the frequency overshoot determined by the group delay of the resolution filter (4) is compensated.

2. (Currently Amended) ~~Resolution~~ A resolution filter according to claim 1, ~~characterised in that~~ wherein:

the variation parameter k_0 is set in such a manner that the middle of the frequency response

$H_{used}(f)$ of the resolution filter is disposed at the frequency origin at the frequency $f=0$.

3. (Currently Amended) ~~Resolution~~ A resolution filter according to ~~any one of claims~~ claim 1 or 2, characterised in that wherein:

$\phi(f)$ and ~~therefore also~~ $h_{allp}(t)$ are selected in such a manner that a minimal-phase resolution filter is formed.

4. (Currently Amended) ~~Resolution~~ A resolution filter (4) according to ~~any one of claims~~ claim 1 to 3, characterised in that wherein:

the value of the constant C_1 is:

$$C_1 = \sqrt{\frac{\pi}{2 \ln(2)}} \cdot B_{res} \cdot T_a$$

wherein B_{res} is the bandwidth of the resolution filter (4).

5. (Currently Amended) ~~Resolution~~ A resolution filter (4) according to ~~any one of claims~~ claim 1 to 4, characterised in that wherein:

the value of the constant C_2 is

$$C_2 = \frac{\pi^2}{2 \ln(2)} \cdot \frac{1}{T_{res}^2},$$

wherein $T_{res} = 1/B_{res}$ is the reciprocal bandwidth B_{res} of the resolution filter (4).

6. (Currently Amended) ~~Resolution~~ A resolution filter (4) according to ~~any one of claims~~ claim 1 to 5, characterised in that wherein:

the value of the constant C_3 is

$$C_3 = \frac{\pi}{K} \cdot B_{res}^2,$$

wherein B_{res} is the bandwidth of the resolution filter (4) and K is the K-factor of the resolution filter (4), wherein the K-factor is defined via the equation:

$$f(t) = \frac{1}{K} \cdot B_{res}^2 \cdot t$$

and $f(t)$ is a frequency variable with time t in a linear manner, which is supplied to a mixer (3) of the spectrum analyser (1) connected upstream of the resolution filter (4).

7. (Currently Amended) ~~Spectrum~~ A spectrum analyser for analysing the spectrum of an input signal with a resolution filter (4) specifying the frequency resolution, wherein the resolution filter (4) has the following complex, discrete impulse response $h_{used}(k)$:

$$h_{used}(k) = C_1 \cdot \left[e^{-C_2 T_a^2 \cdot k^2} * h_{allp}(t) \right] \cdot e^{-jC_3 (k-k_0)^2 \cdot T_a^2}$$

wherein C_1 , C_2 and C_3 are constants, k is the sampling index and T_a is the sampling period,

wherein $h_{allp}(t)$ is the Fourier retransform of $e^{j\varphi(f)}$, in which $\varphi(f)$ is a randomly-specified phase response dependent upon the frequency of the transmission function of the resolution filter,

wherein k_0 is a free variation parameter and

wherein the variation parameter k_0 is set in such a manner that the frequency overshoot determined by the group delay of the resolution filter (4) is compensated.

8. (Currently Amended) ~~Spectrum~~ A spectrum analyser according to claim 7, ~~characterised in that~~ wherein:

the variation parameter k_0 is set in such a manner that the middle of the frequency response $H_{used}(f)$ of the resolution filter is disposed at the frequency origin at the frequency $f=0$.

9. (Currently Amended) ~~Spectrum~~ A spectrum analyser according to ~~any one of claims~~
claim 7 or 8, characterised in that wherein:

$\phi(f)$ and ~~therefore also~~ $h_{allp}(t)$ are selected in such a manner that a minimal-phase resolution
filter is formed.